its varieties seek out wet places, especially near the coast. It is apparently rare in Vermont and inland Maine, but follows the coast east to Machias Seal Island. The varieties are so recently known that separate ranges, if existent, cannot easily be assigned.

Complex Groups.

Ranunculus aquatilis, var. *capillaceus* of Gray's Manual, 7th ed., consists of two or more species. *Thalictrum polygamum* is likewise a complex group, so no conclusions can be drawn about these two at present.

Generally Distributed Species.

Anemone quinquefolia	Clematis virginiana
Actaea alba	Coptis trifolia
" rubra	Ranunculus abortivus
	" recurvatus

These species are so evenly distributed as to require little comment. Of them, however, only *Anemone quinquefolia* and *Ranunculus abortivus* have been reported from Cape Cod. It may be noted that they are all species of rich woods or moist ground.

(To be continued.)

C. H. Knowlton,
W. S. Ripley, Jr.,
C. A. Weatherby.

TSUGA CANADENSIS (L.) CARR.

Ivar Tidestrom.

The correct name for our common, northern hemlock has been recently discussed in a paper[1] by Mr. Farwell, wherein he attempts to prove that the correct name should be *Tsuga americana* (Miller) Farwell.

Mr. Rehder[2] insists upon the retention of the name *T. canadensis* for various reasons.

The writer does not wish to enter into any "intricate" discussion of a more or less vague synonymy — for those who wish to know the

[1] Bull. Torr. Club **41**: 621–629. 1914.

[2] Rhodora **17**: 59. 1915.

details may read the papers cited below, but there are certain statements or queries that must be challenged by any one at all familiar with the history of Botany.

That *Pinus balsamea* L. (Sp. Pl. 1002, 1753) represents two species is agreed to by Rehder and Farwell, for the references to Ray, Plukenet and Gronovius bring into that concept of the species, *Tsuga canadensis.*

It is well known, however, that Linnaeus never intended that the synonymy cited should be considered as necessarily belonging to the plant under which it was given, but that it was possible that such was the case. This view has been held for many years by Scandinavian botanists. "*Synonyma paucissima in* EUROPAEIS *plantis adhibui, contentus C. Bauhino & Iconographo praestantiore; in Exoticis vero plura, quum difficiliora minusque trita sint.*" (L. Sp. Pl. ed. Intr.). ....*neque in multis synonymis, sed in genuinis differentiis specificis constat artis robur.*" (L. Mant. **2**: Praef. 1771.)

The synonyms given by Linnaeus should therefore be valued as they were by him and no more. In the second edition of his Species Plantarum, Linnaeus establishes a new species *Pinus canadensis,* which from all appearances is taken out of *Pinus balsamea.* The new species is evidently based upon the plant of Gronovius [1] as described. "*Abies foliis solitariis confertis obtusis membranaceis.*".... Clayt. n. 547. Linnaeus also cites *Abies foliis piceae brevioribus, conis parvis biuncialibus laxis.* Mill dict. t. 1, which is the plant now called *Picea canadensis* (Mill.) BSP.

In discussing *Pinus balsamea,* Mr. Farwell argues as follows: "During the decade (1753–1763) above referred to Miller published and described under the old style of nomenclature four species of this group and later illustrated at least one of them, the White Spruce. These publications of Miller brought the species prominently before Linnaeus who readily recognized the claims of the White Spruce to specific rank and on the strength of Miller's publications, accorded it such as *Pinus canadensis* in the second edition of the Species Plantarum. Rehder claims that the specific name in *Pinus Balsamea* is indicative of what Linnaeus meant and furthermore that it shows Linnaeus did not get all his information regarding the Balsam Fir from the Hemlock synonyms cited under it. Does not the same reasoning apply when considering *P. canadensis?* Or will Mr. Rehder deny that it does

[1] Flora Virginica, p. 191. 1743.

and insist that Linnaeus obtained the specific name 'canadensis' from the writings of Gronovius on Virginia and the Hemlock Spruce? The entire internal evidence shows conclusively that Linnaeus had the White Newfoundland Spruce in mind when he published *Pinus canadensis* notwithstanding he drew up his diagnosis from Gronovius, which, under the circumstances, was unfortunate. The proper specific name, therefore, for the Hemlock Spruce is the one first applied to it, that of *americana*, and the correct binomial, *Tsuga americana* (Miller) Farwell." (RHODORA **17**: 168.)

In establishing *Pinus canadensis*, Linnaeus left under *P. balsamea* the synonyms of Plukenet and Ray probably because he was uncertain about them. The synonym of Gronovius, however, he places under *P. canadensis*. Why?

That Linnaeus meant that his *P. canadensis* should stand for a Spruce as we understand this genus is out of the question. This is readily seen from his description of the European spruce (*Pinus abies* L.) "*Pinus foliis solitariis subulatis mucronatis laevibus bifariam versis.*" etc. (Sp. Pl. 1421. 1763.) when compared with the descriptive phrase for *Pinus canadensis*. "*Pinus solitariis linearibus obtusiusculis submembranceis*" etc.

The last word excludes the Spruce theory. I question very much if Linnaeus really knew anything about Miller's species except through the brief description and figure. Miller published his work in 1759 and it is altogether unlikely that Linnaeus could have become acquainted with the tree itself or had any notion about it except through the description.

That Linnaeus should have taken up the Gronovian synonym and put it where he did, Mr. Farwell considers "unfortunate."

Linnaeus separated from the concept of *Pinus balsamea* an element which had not been quite clear to him for a number of years but which he evidently thought belonged somewhere else.

Under the "Gronovian description of *Abies foliis solitariis* etc. (*Pinus canadensis*), the following statement is made.

"*Folia linearia, plana, tenuissima, carinata, obtuse, confertim mata, solitaria. Coni magnitudine Fragae, ovati, acuminata, squamis numerosis planis subrotundis obtusissimis.*" (Fl. Virg. 191.) In the second edition of the Flora Virginica the vernacular name Hemlock Spruce-Firr is added.

Mr. Farwell states that Clayton's no. 547 is the basis for the description *Abies foliis solitariis*. . . . Gron. Fl. Virg. 191.

This is the very specimen upon which the additional note given above is based. This note was written by Linnaeus himself when he (at that time living in Holland) and his bosom friend Gronov elaborated Clayton's notes on the flora of Virginia prior to 1739.

For this reason the Claytonian plant which Linnaeus himself knew has the only claim to the name *Pinus canadensis*. Since the Linnaean description is definitively that of the hemlock while the Linnaean citations are a mixture of names referring to the two species (*Tsuga canadensis* and *Picea canadensis*) the former is the only clear element in the concept of the Linnaean species and should determine the application of the Linnaean name. Under the circumstances it seems "unfortunate," not that Linnaeus placed the reference to the Flora Virginica under a specific description drawn up almost verbatim from the Gronovian name cited under it, but that he included in his species the plant of Miller which in the three features distinctive of the hemlock spruce ("foliis linearibus obtusiusculis submembranaceis") is utterly at variance with the description given by Linnaeus of his *Pinus canadensis* — i. e., *Tsuga canadensis* (L.) Carr.

BUREAU OF PLANT INDUSTRY, Washington. D. C.

A MANUAL OF THE GRASSES OF ILLINOIS.[1]— This manual gives descriptions of 63 genera and 204 species with keys to the genera and to the species. An introductory account of the structure of grasses includes the morphology necessary for the student who wishes to undertake the study of the family. Each species is illustrated by a figure of the spikelet and a few by a figure of the inflorescence or by a habit sketch of the entire plant. The drawings are somewhat impressionistic but nevertheless will be very helpful to the student.

The work is based upon a study of specimens and is not a compilation, a fact which differentiates this from several other articles dealing with local grass-floras. The descriptions are as untechnical as consistent with precision. The keys are artificial but thereby more usable by the amateur for whom the book is intended.

Appended to the descriptions of the species are notes on habitat, distribution, and economic value, and a detailed list of specimens.

The author studied the important local collections including that at the Field Museum, and also visited the National Herbarium. The work shows every evidence of careful investigation and in both form and substance is a model for a local flora.— A. S. HITCHCOCK, Washington, D. C.

[1] The Grasses of Illinois by Edna Mosher. Ill. Agr. Exp. Sta. Bull. **205**: 261–425. 1918.

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